



The **Plantsman**

NEW HAMPSHIRE PLANT GROWERS ASSOCIATION

APRIL & MAY 1997



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CALENDAR

April

23 *Landscape/Athletic Field Seminar*, 9:30am-2:30pm, Concord, NH; Dave Seavey at 603-225-5505 or John Roberts at 603-862-3202.

26 *Massachusetts Arborists' Association Arbor Day Celebration*, Attleboro, MA; 508-653-3320.

28 *Arbor Day*

May

2 *FFA Horticulture Career Development Events*, Thompson School, UNH, Durham, NH; David Howell at 603-862-1760.

4 *Volunteer Pruning and Cleanup at State House Rose Garden*, 10am, Concord, NH; David Jordan at 603-437-0306.

10 *"Heritage Plant Sale,"* Strawberry Banke, Portsmouth, NH; 603-433-1108.

June

4 *FTDA District 1-C Meeting: "Wedding Designs by Ned Davis,"* Seacoast location TBA; Betty Covey at 603-893-4578.

12 *Annual Herb and Perennial Plant Sale*, 4-6pm, Urban Forestry Center, 45 Elwyn Road, Portsmouth, NH; 603-431-6774.

15 *Open House*, Lowe's Own Root Roses, 6 Sheffield Road, Nashua, NH; Mike Lowe at 603-888-2214.

18 **** New Hampshire Plant Growers' Association Twilight Meeting*, 6-8pm, Longacre's Garden Center, 220 Mechanic Street, Lebanon, NH; Norm Longacre at 603-448-6110.

18 *UMass Turf Field Day*, South Deerfield, MA; Mary Owen at 508-892-0382.

19 *Landscape/Athletic Field Seminar*, 9am-3pm, Keene State College, Keene, NH; Bruce Clement at 603-352-4550 or John Roberts at 603-862-3202.

20-21 *9th Annual Tour of "The Pocket Gardens of Portsmouth,"* sponsored by South Church, 292 State Street, Portsmouth, NH; times and information: 603-436-4762.

20-22 *"Thorne in Bloom Exhibit,"* Thorne Sagendorph Gallery, Keene State College, Keene, NH; 603-358-2720.

21 *Family Day Open House*, The Fells, John Hay National Wildlife Refuge, Newbury, NH; 603-763-4789.

28 *NH Rose Society Annual Show*, location TBA; Dave Jordan at 603-437-0306.

July

16 *Connecticut Nurserymen's Association (CNA) Summer Meeting*, Pride's Corner Farms, Lebanon, CT; 800-872-2095.

23 *A Cruise Into Lake Sunapee's Past* (a fund-raiser sponsored by Friends of The Fells), Sunapee, NH; 603-763-4789.

26 *Second Annual Daylily Extravaganza*, Davis Brook Farm, Route 137 S., Hancock, NH; George Timm at 603-525-4728.

26-27 *Mount Washington Valley Garden Trail*; times and map locations: Margo Ellis at 603-367-8587.

August

5 *Massachusetts Certified Horticulturalist (MCH) Exam*, Waltham, MA; Rena Summer at 413-369-4731.

8-10 *Northeast Organic Farming Association (NOFA) 23rd Annual Summer Conference*, Hampshire College, Amherst, MA; Julie Rawson at 508-355-2853.

13 *New England Nursery Association (NENA)/Massachusetts Nursery and Landscape Association (MNL)/Rhode Island Nursery and Landscape Association (RINLA) Summer Meeting*, hosted by Quansett Nurseries, South Dartmouth; Sylvan Nursery, South Westport, MA; 508-653-3112.

15-16 *6th Annual Plant Sale*, The Fells, John Hay National Wildlife Refuge, Newbury, NH; 603-763-4789.

21 *Griffin Greenhouse and Nursery Supplies 9th Biennial Open House/Gala Golden Anniversary Celebration*, 1619 Main Street, Tewksbury, MA; 508-851-4346.

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Cover

Martha Washington geraniums, Carpenter's Olde English Greenhouse, Newmarket, NH; photograph by Rick Raymond, Durham, NH; phone: 603-659-7313.

The Plantsman is published in early February, April, June, August, October, and December with copy deadlines being the first of each prior month. While camera-ready arts are preferred, set-up assistance is available at a nominal fee. Free classified advertising is offered as a member service. We will carry a short message (no artwork or logos) for one or two issues of *The Plantsman*.

AD SIZE	6x	1x
3 3/8" w x 2 1/4" h	\$120	\$30
3 3/8" w x 4 3/4" h	\$160	\$40
7" w x 2 1/4" h	\$160	\$40
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For further information, please contact the editor: Robert Parker at the UNH Research Greenhouses, Durham, NH 03824, 603-862-2061; or PO Box 5, Newfields, NH 03856, 603-778-8353.

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Dear NHPGA Members:

I was delighted to be awarded your academic scholarship this year. Thank you so much! It is only with the generous help of groups like yours that I am going to pursue my bachelor's degree. In case you're curious about where your support is going, let me introduce myself.

I grew up in Loudon, New Hampshire, and earned an associate's degree in Resource Management from Sterling College. I worked on a dairy farm for six years and periodically at Millican Nursery before returning to school full-time last fall. I'm studying agriculture education through the Adult and Occupational Education degree program at UNH. From June to December of this year I will be in Botswana, Africa, as an International 4-H Youth Exchange delegate and I look forward to sharing this experience when I return.

Thank you for your support: it made a real difference for me. I hope you continue to find your scholarship a worthwhile investment.

Jennifer Barton

Sincerely,
Jennifer A. Barton

A Note of Appreciation

The New Hampshire Plant Growers' Association (NHPGA) has always been a "do-it-yourself" sort of organization, in which the success of its activities depend on the time and skills given by members. In mid-winter, three events require this special effort.

Peter van Berkum (van Berkum Nursery) and Greg Grigsby (this NHLA counterpart, from Pellettieri Associates) organized this year's NHLA/NHPGA Winter Meeting. Once again, Guy Hodgdon (NHLA) and Chris Robarge (NHPGA) handled



registration. It should be noted that the three morning speakers, Henry Huntington (Pleasant View Gardens), Leslie van Berkum (van Berkum Nursery), and Paul Fisher (UNH Plant Biology) donated their time and information as well.

In this time of strong emphasis on "image," it's important that the NHPGA continues to have a presence at area trade shows. We thank Robert and Mike Demers and Steve Huppe for setting up and taking down the NHPGA display at this year's Farm and Forest Exposition. The plant material was donated by Demers Nursery and Garden Center.

And the NHPGA display at this year's New England Grows was set up (and taken down) by Bob Rimol (Rimol Associates).

We thank all of you for your work in behalf of New Hampshire's Green Industry.

New Board Member

The board of the New Hampshire Plant Growers' Association welcomes its newest member, George Timm of Davis Brook Farm in Hancock. What started six years ago as a backyard operation is now a full-time wholesale business of container-grown shrubs, roses, and daylilies.

Association Officers**President**

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Robert Demers

The cost of labor is always an issue for anyone running a business. At the garden center, we are aware of this and study our day-to-day routines to see how we can save time.

One routine is watering. Watering's an important task, but with all the automated systems out there, there are ways to do it quickly. At the greenhouses at the garden center, we use three systems—drip, trough, and ebb and flow.

If you're deciding on the system for you, here are some things you might consider. What are you growing in the house throughout the year? What size material will you be growing? You'll want to make sure that your system can handle pot or tray size as well as the different varieties.

Is your house a sales or production area? You'll want to make sure that the system in a sales area doesn't scare off your customers. And you want to be able to use your system without the customer getting in the way of what you're trying to do.

Can the system pay for itself in a reasonable amount of time? There are a lot of different systems and a lot of different prices.

Make sure you have enough water. In ebb-and-flow systems, for example, each 6'x14' bench requires 50 gallons of water, while a trough system is low-volume and requires very little. With a drip system, you must worry about the pressure and volume needed to make your emitters run properly.

Make sure your system is user-friendly. Let's face it—you try to do everything, but you can't. Your em-

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ployees must be able to run it properly.

There are probably things I've overlooked, but there are several sales representatives out there who'd be more than happy to show you how a system works and prescribe one for you.

In our hoop houses, I decided to use drip. We grow jumbo annuals—about 1,200 6 1/2-inch pots—in each house. We grow two rotations. I use what they call a 12-way emitter (dripper) because it matches the number of rows I put in each house. The manufacturer has a guide that tells you what size pipe to use and how far you can run with various numbers of emitters. I used 1/2-inch tubing because I could buy it in large quantities and it was cheap. However there's a limit on the number of emitters you can use with this pipe size.

I put my manifold in the middle of the hoop house so I won't have any length restrictions. I also put a shut-off on each line. The main line

feeding the manifold has a filter, pressure-reducer, and an electric solenoid hooked to a clock. Each house is set up in the same way. So when I check the watering, I turn on whichever lines I want watered, then turn on the clock, which turns on the solenoid for whatever time I think is needed. For the size emitter I'm using, that's usually about twenty minutes. I do this in each house in sequence. Watering the five houses by hand would take two-and-a-half hours. Now I check them in a total of 20 minutes and have two hours to be doing other things. I run the hoop houses in sequence because I don't have the water volume to run them all together.

Also remember that the number of shut-offs in a house will decide the number of varieties you can grow there. Some plants don't require as much water as others. So the shut-offs give you options. I usually grow four varieties in each house.

I can't stress enough to look before you leap. There are a lot of different watering systems employed now. I've looked at several, experimented with some, been to countless seminars—and I'm still learning. Find a system you like and adapt it to your own operation. If you're smart enough to operate a business, you're smart enough to figure out a watering system.

In my next article, I'll talk about trough vs. ebb-and-flow

Robert Demers, of Demers Nursery and Garden Center, 656 South Mammoth Road, Manchester, can be reached at 603-437-6336.

Farm and Forest

The 14th Annual Farm and Forest Exposition, held in Manchester on February 7-8, was notable for its crowds ("one of the best attended we've had"), live music ("a first"), and the unveiling of a new, statewide effort to bring New Hampshire-made products and services under a single, themed identity.

Entitled "New Hampshire Stories," the campaign will focus on the image and characteristics of each New Hampshire producer or service-provider that participates, the stories they have to tell, and the overall story of the many attributes of the state of New Hampshire. A

variety of tags, labels, and other promotional materials will be made available.

A 29-member development committee (which included Gary Matteson, New England Anemones; Agriculture Commissioner Steve Taylor, and Gail McWilliam, Division of Agricultural Development) represented a broad spectrum of the economy and saw enormous value in developing a common identity for not only New Hampshire's food and gift products, but its arts, technology, and service sectors as well.

Businesses in the pilot program include The Balsams Grand Resort Hotel, Dixville Notch; Chuck Roast Equipment (Conway), and Hetnar

Orchards (Epping). According to members of the coalition, the group is creating a private, non-profit organization to administer the program and to have it fully operational by the Governor's Conference on Tourism in May.

For information, write New Hampshire Stories, Inc., PO Box 3214, Manchester, NH 03105-3214; the phone number is 1-888-647-8674.

Customer Surveys

After last year's successful pilot program, the customer survey program developed by Dave Seavey, Merrimack County Extension, will continue this year. This May and June,

Progress Report on Exempting Temporary Greenhouses from Taxation

In January, our proposed bill (72:12-d Exemption), which would exempt temporary greenhouses from taxation, went before the Committee on Local and Regulated Tax Revenues. The hearing was well-attended by members of the NHPGA and other agricultural groups supporting the bill. Typically, with over 1,000 proposed bills and many committee hearings at this time of year in Concord, little time is given to each hearing. This one lasted about an hour, indicating that this is an important issue to our legislature. The only opposition from outside groups was from the Municipal Association, which represents the interests of local municipalities. (They are always opposed to Concord mandating tax cuts/breaks.)

The bill went to a subcommittee headed by Representative Richard Noyes of Salem. Members of the subcommittee are Lauren Carney (Hancock), Betsy Coes (Newfields), David Flanders (Exeter), Linda Foster (Mont Vernon), and Marian Lovejoy (Raymond). After three subcommittee hearings, it was decided that the bill needed to be studied further to clarify the content and intent of the proposed legislation. Therefore the subcommittee voted for "re-referral," which means the bill is going to be studied over the summer and fall and, if passed in the subcommittee and in the Local and Regulated Revenues Committee, would be voted on next year.

Presently, the hurdle we are facing is to reach an agreement on a definition of "temporary greenhouse structure." Fortunately, we've had a great deal of help from Dave Seavey of Cooperative Extension, Brenda Clemens of Farm Bureau, the Department of Agriculture, and members of the NHPGA. We are trying to emphasize that these temporary greenhouses are demountable, personal property and are not permanent in any way.

Presently, Representative Noyes fully supports the bill; Representative Foster is "on the fence," but leaning against the bill, and Representative Coes is against the bill. The other subcommittee members were not at the meetings. We need to educate these people and stress the value of our industry. If we do not have a bill that clearly accomplishes our goals, we will discontinue the bill in subcommittee. If the subcommittee hearings result in success, our bill will go to the main committee for review before going to the House of Representatives for a vote.

Right now is the leg work, but the real work will come when the bill reaches the floor. That's when we'll need you to make a phone call to your local representatives to put pressure on them to vote for this bill. At least ten states have a law that exempts temporary greenhouses from taxation and other states are in the process of passing bills similar to ours. In order for New Hampshire growers and farmers to stay competitive with the rest of the country, we need this legislation passed!

For more information, please contact Bob Rimol at 603-425-6563.

four garden centers will be conducting customer surveys.

Each survey—usually two sides of a single sheet—is personalized to fit the needs and concerns of the business involved. Questions usually deal with buying habits and preferences ("Is this your first time here?" "Where did you learn about us?" "Where else do you buy?" "Why," etc.). Often the customer rates the importance of various factors. A 10% discount for any plant material purchased is given for completing the survey.

The results are tabulated and there's a team evaluation—the team usually including Dave Seavey and Mike Sciacbarrasi—and a discussion with the owner. The discussion usually deals with strengths and weaknesses, directions to pursue, directions to abandon, marketing...goals, specific improvements.

And next year, Dave hopes to do more. The program is state-wide, voluntary, and confidential. Those interested in participating should contact Dave Seavey at 603-796-2151.

Jim Ludlow

(The Portsmouth Herald, February 28)

Portsmouth, NH: James Edward Ludlow, 32, died unexpectedly on Wednesday, February 26, 1997, at his home. Born and raised in Sea Cliff, NY, he graduated from the University of Vermont, School of Plant and Soil Sciences, in 1987. Over the last six years, he enjoyed

success and satisfaction working for IV Seasons Marketing as a sales representative throughout northern New England.

He is survived by his parents, Charles and Joan Ludlow of Pemaquid, ME; maternal grandparents Alfred and Elaine Toombs of Mt. Dora, FL; brothers David of Brooksville, ME, and John of Maynard, MA, and their wives and children; an aunt, Jane Browne of Vermont; and an uncle, Ted Toombs of Long Island, NY.

Memorials include a tree planted in Jim's memory in the arboretum of Princeton Nurseries in Allentown, New Jersey.

IV Seasons Marketing and the Ludlow family have set up a James E. Ludlow Endowment Scholarship at the University of Vermont. The fund will be in perpetuity and will be used by students in the field of horticulture. Contributions (by check made out to the James E. Ludlow Endowment Scholarship Fund) should be sent to the University of Vermont, 411 Main Street, Burlington, VT 05401.

Showtime Continues

Three months after the Monadnock Region's *Breath of Spring* show in March, Keene area residents will have another show for their pleasure—the "Thorne in Bloom Exhibit," which "marries art from the Thorne Sagendorph Gallery's permanent collection with floral arrangements and garden interpreta-

tions by area garden clubs and professionals." Times are Friday, June 20 (noon to 4pm) and Saturday and Sunday, June 21-22 (10am-4pm); The gallery is located on the Keene State College campus; admission is \$5.00 per person. For information, contact the gallery at 603-358-2720.

* It should also be noted—although these aren't specifically shows—that Gateway Gardens, 430 Loudon Road, Concord, once again is offering a series of spring clinics. The series is too lengthy to list on our calendar, but the clinics are usually on Saturdays at 10 and topics range from peonies to blueberries, fruit trees to water gardens. For a listing of exact times and topics, call 603-229-0655.

* For people wanting to know about agricultural events in general, the NH Department of Agriculture, Markets and Food's Division of Agricultural Development publishes a "Rural New Hampshire" brochure listing "festivals, shows, museum events, field days, harvest events, competitions, markets, and any other activities that highlight New Hampshire's rural history, agriculture, and forestry, with an emphasis on family entertainment and education." The 1997 version includes events from April, 1997, through March, 1998.

To have one of your events listed on next year's brochure or to request this year's for yourself (or for your customers), contact Gail Mc-William at 603-271-3788.



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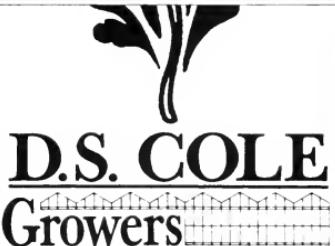
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The Green Spot

The Adventures of Gnatasha and Lindy

The grower added water to his sphagnum-based soilless media, unaware that the water was giving life to more than just his transplants. Deep within the pots, life of a different kind was forming.

As the life-giving water splashed down upon her, she could feel its magic go to work. From an egg, through metamorphosis, Gnatasha became at last a full-fledged larva.

Straining through bleary, newly developed eyes, Gnatasha saw her siblings beginning their new lives as hatchlings, as she had done only moments before. She was also quite sure that, as was she, they were experiencing their first agonizing bouts of hunger; the larvae were famished. Fortunately, new, unestablished roots were just a wriggle away.

For days, Gnatasha and her siblings were content with their meal of fungus and rotting root hairs, stopping their feeding only to molt. The larvae were becoming quite large. Again, the undeniable pull of metamorphosis drew the plump larvae into new worlds: that of the pupa, then of adulthood.

The grower noticed that the transplants were failing in their mission of growth. His concern made him grab a couple pots to study during his morning coffee break. With cup in hand, the grower sat for a couple minutes pondering some of the other facets of his thriving business.

At that moment—that very moment, wiry-legged adult fungus gnats were emerging from the pots on the table. Gnatasha was being wooed by one of her pot-mates. Some of her siblings were making unstable attempts at first flight. One gnat gained considerable height before being caught in an extremely hot coffee-steam thermal. Buffeted to-and-fro, this adventurous gnat—Lindy—managed to break free of this powerful force, only moments before being violently swept downward by wind-shear. Lindy met his demise in the grower's coffee cup.

One sip of coffee was all it took for the grower to understand what was happening. Fungus gnats were seemingly everywhere. He had considered treating his newly opened growing media with a shot of parasitic nematodes (*Steinerinema spp.*), fungus gnat predatory mites (*Hypoaspis miles*), azadirachtin (neem), or *Bacillus thuringiensis* var. *Israelensis* (Bt-1). Next time, gnaturally, he will.

Mike Cherim is president of The Green Spot, Ltd., Department of Bio-Ingenuity, 93 Priest Road, Nottingham, NH 03290-6204. The phone number there is 603-942-8925.

President Stockman

William Stockman, owner of Spider Web Gardens in Center Tuftonboro, New Hampshire, has been elected president of the New England Nursery Association (NENA), the regional trade association representing nursery stock growers and other professionals in the Green Industry. Bill was elected at the NENA annual meeting on January 31, 1997, in Boston, MA.

Bill has a history of service to the Green Industry. As an active member of the NENA board of directors since 1992, he was instrumental in developing grant programs to assist with horticultural education and marketing within New England. In addition to his work with NENA, Bill has served the industry though his work with the New Hampshire Agricultural Advisory Board, Carroll County Cooperative Extension, and the New Hampshire Farm Bureau Federation. He's also past president and board member of the New Hampshire Plant Growers' Association. We wish him a successful year.

The Plant of the Year

The Perennial Plant Association's choice for the 1997 Perennial Plant of the Year is *Salvia 'May Night'* ('Mainacht'). Bred and introduced by the German plantsman and philosopher Karl Foerster, 'May Night,' with its mound of aromatic, slightly

blue-grey foliage and long season of bloom, is one of the most versatile *Salvia* cultivars. But it is the floral display that makes this special: "florets, borne on upright spike-like inflorescence, are deep, rich, indigo-black, outlined with delicate purple bracts." 2-2 1/2' tall and 1/2' across, flowering from May into July, without serious pest problems, *S. 'May Night'* does well in full sun in zones 4-8.

For details, contact the Perennial Plant Association, 3383 Schirtzinger Road, Columbus, Ohio 43026. The telephone number is 614-771-8431.

All-America Rose Selections

The 1997 All-America Rose Selections include two hybrid teas and a floribunda.

'Artistry,' a hybrid tea, "paints a landscape of soft coral orange with 30-petaled flowers that can grow to five inches across." The plant stands to five feet, with dark green semi-glossy foliage and well-branched canes. Sixteen-to-18-inch stems and a light fragrance make this a choice for cutting gardens.

'Timeless,' another hybrid tea, has 4 1/2-inch, deep rose-pink blooms with 25-30 petals each. The plant grows to 4 1/2 feet, has dark green, semi-glossy foliage, and upright, well-branched canes.

Both were hybridized by Keith

Zary and introduced by Jackson and Perkins.

'Scentimental,' a free-blooming, rounded floribunda, "mimics the look and scent of the striped hybrid roses of the 1800s" with its burgundy-and-cream-striped petals and a sweet spice fragrance. It has deep green, quilted foliage and 4-inch flowers with 25-30 petals. Introduced by Weeks Roses, 'Scentimental' was hybridized by Tom Carruth.

For further information, particularly on cold-hardiness, contact All-America Rose Selections, 221 N. LaSalle, Suite 3500, Chicago, Illinois 60601-1203; the phone number is 312-372-7090.

Red Dragon

(Carnivorous Plant Newsletter, Volume 25, June 1996)

Through breeding efforts in the support greenhouses of the Atlanta Botanical Garden, a new all-red form of the Venus flytrap (*Dionaea muscipula*) has been created.

Dionaea muscipula 'Akai Ryu' (which are the Japanese words for "Red Dragon") has the typical growth habit and flower morphology, but the petiole, blade, and trap exhibit dark maroon to burgundy coloration. Any green coloration has been noted only around the center of the plant in mid-winter.

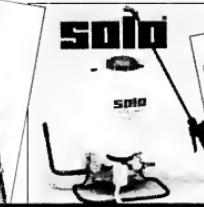
The cultivar is being propagated for commercial release by Agristarts III, Apopka, Florida.

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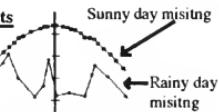
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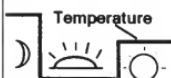
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Pioneer Pointers

Retirement Savings

Does your financial plan include managing your tax liability and saving for retirement? If so, don't overlook the IRA contribution. This is a great opportunity to delay paying taxes on a portion of your income and save for retirement. Although the allowable IRA deduction varies depending on your income level, many working married couples will qualify for up to \$4,000 annually. Before you decide not to take advantage of this important deduction, consider the following financial benefits of contributing to an IRA each year.

The immediate benefit is a tax savings of at least \$600 (which is 15% of \$4,000). The savings increase if you live in a state with a state income tax and your state allows the Federal IRA deduction. The long-term savings are even more impressive: a \$333.33 monthly investment (to maximize the allowable contribution) with an average 10.2% return (the historic average return from the stock market) over a thirty-year period will grow into \$786,412.93.

Many taxpayers are eligible to contribute to an IRA and benefit from the tax-deferred earnings. However, entitlement to an immediate tax deduction for the amount of annual contribution is limited by your adjusted gross income. With the power of tax-deferred earnings and the ability to choose your investment vehicle, an IRA provides a powerful investment option as you save for retirement.

The 1997 season is upon us. Although you're busy with operating decisions for 1997, take a few minutes to consider your financial future. Your Farm Credit representative is available to assist you with these financial decisions and is likely to have additional pointers for your consideration. (R.W.)

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Calculating Gross Margin

Jean Bernard Gagne

Esentially, before figuring gross margin, you need to calculate two categories of cost: direct (variable) and indirect (fixed).

Direct costs are those which are directly related to the product: raw materials, freight charges, delivery to the customer. The word "variable" is generally used to identify these costs. Indirect costs are all the other expenses of the business and are known as "fixed" costs.

Let's say a garden center sells the following—trees, shrubs and perennials, annuals and bulk goods, and gardening supplies. Let's refer to the table below to analyze a year's sales.

The percentage represents the difference between purchase price and sales price. Markup is percentage over the cost. Thus, this garden center has a gross margin of \$67,000, with which to pay general expenses (including wages) or "fixed" costs—which leaves an acceptable net profit.

Should this garden center stop selling flowers because it doesn't pay enough? Suppose it did this. If

there were no flowers for sale, some customers will stop coming. The \$8000 margin would disappear, along with the \$2,500 used for maintenance. An employee would be cut, a valuable person in the busy season... The alternative would be to increase the margins by \$10,500 on the remaining sales of \$128,000, thus increasing the percentage of the 2.0% markup to 2.2%.

If a garden center adds a new line—let's say turf—with a potential sales volume of \$10,000, without other direct costs and with a margin of 25%, that margin becomes net profit.

Thus, we can see that a garden center can increase its offerings as long as the gross margin is positive. Removing a product line because it doesn't bring in enough is a mistake: no matter how small its profit, each line offered adds to the overall enterprise.

M. Gagne is owner and operator of Jardins Jean Bernard Gagne, 995, Route 141, Magog, Quebec J1X 3W2. His telephone and fax are 819-843-5071.

PRODUCT	Trees/Shrubs	Flowers	Bulk Goods	Total
SALES	\$75,000	37,000	53,000	165,000
DIRECT COSTS (ITEMIZED)				
<i>Purchases</i>	30,000	24,000	32,000	86,000
<i>Financing/stock</i>	1,000	—	1,300	2,300
<i>Loss/stock</i>	1,000	2,500	—	3,500
<i>Maintenance</i>	4,000	2,500	500	7,000
Total	\$36,000	29,000	33,800	98,800
MARGIN	39,000	8,000	19,800	67,000
Percentage	52%	21%	37%	41%
MARKUP	2.5	1.5	1.6	2.0

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Azaleas for New Hampshire

Joe Parks

*A*zaleas—"Beautiful, versatile shrubs for everyone;" "An abomination foisted on the unwary;" "A disease- and-insect-prone unsightly plant;" "Gorgeous butterflies of the rhododendron world." You are likely to hear these comments and others just as diverse whenever there is a discussion of deciduous azaleas. Who's right? Well, in truth, everybody! The problem is that all deciduous azaleas are not created equal. And it is of considerable importance for you as a retail nursery owner who values your customers to know the differences.

The problem is that many of the azalea cultivars in the trade in New England are highly susceptible to mildew and green sawfly larvae damage. The larvae strip the leaves (and sometimes flowers), leaving only a needle-like midrib; the mildew disfigures the new leaves that grow out. Yes, there are sprays to kill sawfly larvae and prevent mildew but, to my way of thinking, this is an undesirable solution for the average homeowner. Five months of bare branches, a week or two of flowers, a month of stripped leaves and two months of spraying or of disfigured, mildew-covered leaves do not a fine plant make. I suggest that if you handle disease-prone cultivars, you should advise your customers about controls.

Notice that I said 'cultivars' and not 'plants,' for the problem is genetic. Fortunately our Eastern North American (and some exotic) species are highly resistant to both saw fly larvae and mildew. Some hybrid progeny also display this resistance, so there are plenty of "good" plants available (see list). Now that the problem—and the solution—is understood, there will be more resistant cultivars coming onto the market.

I should point out that this problem with mildew and sawfly is not universal. New Jersey growers don't seem to think it a problem and when I talked to hybridizers in Oregon last year, they wanted to know why the fuss. Unfortunately, not having the problem, they pay little or no attention to it in their hybridizing.

Even though there are some problems, deciduous azaleas are eminently suited for New Hampshire. There are resistant species and hybrids hardy from the Seacoast to the farthest reaches of Coos. There is even a

resistant hybrid, 'Lemon Drop,' that is hardy to at least -34°F. (Zone 3B). Furthermore, they offer a long season of bloom, starting in April and ending in July. Better still is the wide range of flower color which includes reds, pinks, oranges, yellows, lavenders, and whites.

The cultural requirements of deciduous azaleas are much the same as for all rhododendrons. They need an acid soil (pH4.8 to pH6.0) that is high in organic matter. Certainly we have plenty of acid soil (except house foundations and some Connecticut River Valley areas). For this reason, use of acid-type fertilizers is unnecessary and even undesirable. In particular, aluminum sulfate ($AlSO_4$), or materials containing it, should never be used around any rhododendron regardless of the soil pH. Although $AlSO_4$ will reduce the pH, the aluminum component is deadly to all members of the genus.

If azaleas are well-mulched, they are unlikely to need much fertilizer. It is best to have soil tested to determine actual needs. But since testing is so seldom done, I recommend that a single light fertilization be given annually. Any low-nitrogen type of fertilizer such as 5-10-5 or 5-10-10 is satisfactory. It should be applied in small amounts (maximum of a tablespoonful around a four-foot plant) after the first fall frost and before spring thaw. Late-spring or summer fertilization can induce late-summer growth, resulting in winter kill.

Azaleas (indeed all plants) need calcium and magnesium for photosynthesis. New Hampshire soils are notoriously deficient in both of these. Though all members of the rhododendron genus are well-adapted genetically to growing in mineral-deficient soils, it is not unusual to see plants in New England with yellowing, chlorotic leaves due to the lack of these two minerals.

Unfortunately, the ordinary solution of using of dolomitic limestone to correct the problem is not a choice. Since this would increase the soil pH, it could create even worse problems. The answer is to use gypsum ($CaSO_4 \cdot 2H_2O$) and Epsom Salts ($MgSO_4$). Not much is needed. Lacking a soil test, I would suggest using no more than half a teaspoon of each annually per four-foot plant. Now a tip for extra business and customer goodwill: carry some gypsum in stock and put up a sign, "For your rhododendrons". There are very few current sources and few people know its value.

I mentioned fertilizer first because everybody seems to want to fertilize. But, if at all possible, you should convince your customers that fertilizing is not the most important thing for plant health. Far more important to azalea health (and good growth) is the use of plenty of organic matter when planting and the application of mulch annually.

Mulch, for all its value, is often misused—to a plant's detriment. Some people have the misconception that if some mulch is good, then more is wonderful. Not so. The oxygen needs of azalea roots are rather precise. Cover them too deeply and they quickly die. So a reasonable recommendation is three inches of loose mulch (*not* peat moss) the first year and no more than two inches annually thereafter.

Azaleas need plenty of moisture—but wet feet will quickly kill them. The answer is a well-drained, moisture-retentive soil that organic matter provides. Waterlogged soil or clay soil creates a particular problem since it drains poorly—or not at all. If a way to drain a planting hole cannot be found, then the planting site must be raised above the soil level. I dig a much larger hole than necessary, fill it with mulch and some of the soil. Then I mix the remaining soil with more mulch. This I mound up six to ten inches over and around the hole. The azalea is then planted with no more than half the root ball below the original soil level.

Sounds almost as if azaleas were a persnickety plant, but that's absolutely not true. They're tough and can survive lots of abuse—much more than many other plants. I've seen them growing in the wild on solid rock in less than an inch of soil. But mere survival is not the point.

When your customers buy plants, they are unlikely to be satisfied with anything less than top performance—and mind you, that's the perfect performance they see in their mind's eye. If the plant doesn't come up to expectations, that's your fault. If it grows well, that just shows how good a gardener they are. Hopefully, they'll also thank you. But on the other hand, if they just become dependable customers, that's thanks enough for anyone in business. So it's important to be able to tell customers how to be successful with the azaleas they buy from you. Then they will thank you in the right place—the pocketbook.

This is Joe's second article for *The Plantsman*. He hybridizes azaleas with emphasis on hardiness, late flowering and resistance to mildew and insects. His six-acre garden in Dover, NH (Zone 5A) includes a thousand or more azaleas and rhododendrons. He is a member of the American Rhododendron Society and the Garden Writers Association of America. NHPGA members are welcome to call him at 603-749-4498 and to visit his garden.

Some Deciduous Azaleas Suitable for New Hampshire

H Y B R I D C U L T I V A R S

Note that cultivars on this list have been chosen because their known resistance to mildew and insect damage.

Frank Abbott Zone 4A (-27F). Vibrant dark pink fragrant flowers—almost red. Blooms in late May. Full sun. Seven feet in ten years.

Jane Abbott Zone 4A (-29F). Extremely fragrant rich pink flowers. Blooms in late May. Full sun. Seven feet in ten years—wide growing. Seems to prefer a less acid soil than most—say about pH 6.5.

Lemon Drop Zone 3B (-34F). Pale yellow flowers. Red-brown winter stems. Blooms in mid-July (long lasting) Full sun. Ten feet in ten years.

Lollipop Zone 4A (-30F). Extremely fragrant pink flowers. Blooms in late June. Full sun. Six feet in ten years—wide-growing.

Parade Zone 4B (-24F). Fragrant dark pink flowers. Blooms in mid-July. Full sun. Eight feet in ten years—columnar-growing.

Peach Abbott (Jane Abbott Peach) Zone 4A (-29F). Fragrant orange-pink flowers. Blooms in late May. Full sun. Ten feet in ten years.

Pink and Sweet Zone 4A (-29F). Fragrant light pink flowers. Blooms in late June. Full sun. Five feet in ten years—makes a mound.

Siskin Zone 5B (-14F). Large brilliant yellow flowers. Blooms in late May. Full sun. Ten feet in ten years. Although not fully resistant to mildew, it is the most resistant of any of the Ghent azaleas.

There are likely other cultivars resistant to mildew and insect damage. However records have been kept only in recent years so they are not generally known. What is known is that most of the Knaphill, Exbury, Northem Lights, and Ghent azaleas are extremely susceptible. Although beautiful in bloom, these hybrids are therefore not particularly desirable for home use. A number of hybridizers, including the author, are working on development of resistant plants.

Some Deciduous Azaleas Suitable for New Hampshire

(continued)

S P E C I E S

arborescens (Sweet Azalea) Zone 5A (-20F). White flowers. Blooms in early to mid-July and is very fragrant. Does well in shade. Eight feet in ten years. If I could choose only one species, this would be it.

atlanticum (Coastal Azalea) Zone 5B (-14F, maybe -18). White flowers. Blooms late May to early June; fragrant. Stoloniferous. Prefers sun. Six feet in ten years.

bakeri (Cumberland Azalea) Zone 5A (-210F). Flowers various colors from red to yellow. Blooms mid-to-late June. Partial sun. About four feet in ten years.

calendulaceum (Flame Azalea) Zone 5A (-20F). Flowers red, orange, or yellow; the brightest of any azalea. Blooms late May to early June. Partial sun or open woods. Eight feet in ten years.

canadense (Rhodora) Zone 3B (-35F). Lavender flowers. Blooms mid-to-late May. Partial to full sun in damp location. Three feet in ten years. There is also a white-flowered form "albiflorum"

japonicum (Japanese Azalea) Zone 5A (-23F). Flower color ranges from yellow to orange to red. Blooms late May to early June. Full sun, likes damp location. Six feet in ten years.

mucronulatum (a deciduous rhododendron) Zone 5A (-20F). Purplish pink flowers. Blooms mid-April to early May. Partial to full sun. Seven feet in ten years. Cornell Pink is a choice pink form of *mucronulatum*. It is just as hardy and is to be preferred to the species.

peridymoides"/"nudiflorum" (Pinxterbloom Azalea) Zone 4B (-25F). Flowers various shades of pink. Blooms in late May. Partial sun or open woods. Six feet in ten years.

prinophyllum"/"roseum" (Roseshell Azalea) Zone 4A (-28F). Flowers pink to purplish pink. Blooms late May to early June. Partial sun or open woods. Twelve feet in ten years.

prunifolium (Plumleaf Azalea) Zone 5A (-20F). Flowers from reddish orange to vivid red. Blooms mid-July to mid-August. Partial shade. Ten feet in ten years.

pukanense (Korean Azalea) Zone 5A (-20F). Lavender flowers. Blooms in late May. Partial shade to full sun. Three feet in ten years with very compact growth. Note that this hardiness rating is lower than most and is based on my records and 30-year old plant in Concord, NH.

vaseyi (Pinkshell Azalea) Zone 4B (-25F). Flowers pink—see "White Find" below. Blooms early-to -mid-May. Partial shade. Eight feet in ten years.

White Find is a very desirable white form of *vaseyi*, grows more slowly and is apparently not quite as hardy.

viscosum (Swamp Azalea) Zone 4A (-27F). White flowers with spicy fragrance. Blooms in mid-June. Partial shade to full sun, tolerates wet soil. Eight feet in ten years.

viscosum subspecies "glaucum" is a more desirable form because of its compact form and glossy leaves.

schlippenbachi (Royal Azalea) Zone 5A (-18F). Elegant pink flowers. Blooms in early May. Partial shade. Eight feet in ten years with compact growth. Flowering time here (Dover) coincides with our early May frosts, so it has not proven desirable for me.

Note that the hardiness ratings shown do not always conform to current literature. Where different, the changes are based on the New England rhododendron hardiness records maintained by the author since 1982.

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Very Logical and Mostly Green

The houses are 400 feet from the road. Although the woods in front have been thinned, the structures are not obvious. The sign to the right of the dirt driveway is unobtrusive, but the display garden to the left is an eye-catching 10'x50' mounded bed of mixed annuals and perennials, a welcome addition to Swansey's town center.



BARRETT'S Greenhouse and Nursery began in 1994 when Bill and Deb Barrett bought the 16 acres of land with house and storage garage on it in Swansey Center.

Born and raised in Keene, Bill Barrett went to UMass, Amherst, graduating from the School of Plant and Soil Science. He decided to go into dairy farming and he and his wife moved to Maine—"We had a farm up in Buxton. But the barn was on one side of a highway, the house on the other. It was okay when we had no children, but after we started a family, we said this is no place to raise kids."

So they moved back to Keene. Bill raised pick-your-own strawberries, worked at landscape construction, and at golf course maintenance before deciding to start his own greenhouse and nursery business.

Most of the land was second-growth pine. Bill cut and stumped a space large enough for his production range. Leveling the land created a terrace six feet lower than the house and garage. That first fall, he put up a 28'x96' Ed Person house parallel to the garage (these two structures form the sales area)

and a 14'x96' hoop house in the new, leveled space immediately behind it.

After a promising 1995 spring season, he put up three 21'x96' Person houses—twelve feet apart (wide enough for a snowplow)—in the production area. The slightly higher ground on the north and west, along with the woods left standing, act as windbreak.

The houses are set on the points of the compass, the west ends facing the road.

All but the cold frame are double-poly, heated with SunDair oil-fired furnaces ("Oil seemed least expensive—a few more Btu's than propane"). The poly is a no-drip acrylic: "more expensive—it works fairly well: the water sheets—and runs until it hits the purlins." He doesn't hang plants from the purlins—he doesn't want to punch holes in the plastic. For his hangers, he has several thin rods connected to the undersides of the ribs running the length of the house.

Each has a fan at one end and wall shutters at the other, four Horizontal Air Flow fans, and roll-up sides. In late spring, the houses are covered with 60% shade cloth. Crops are grown on wire floor-on-wood frame benches (4'x7' or 4x12') going the length of the house, creating four-foot-wide benches down each side, two three-foot-wide aisles, and seven-foot-wide benching in the center. The retail house has peninsular benching—"for better traffic flow." Weed mat (swept weekly) covers the ground.

Water is piped through PVC pipe from a shallow well ("only 18 feet deep, but it's always supplied all the water I've needed"). Watering is by hand; feeding, with a Dosatron.

He's never had insect problems—"good sanitation and the long period in which the houses are shut seem to take care of them."



THE SEASON begins in January in the basement of Bill and Deb's home when the first seeds—pancies and seed geraniums—are put into the growth chamber. The "chamber" is five plywood shelves—each able to hold ten plug trays—on a 2x4 frame, with a bank of fluorescent lighting above each shelf.

Each tray is kept inside a plastic bag until the first signs of germination and then under an acrylic dome until the seedlings are strong enough to be removed from the chamber.

Previously, Bill had funnelled seeds from their packets into 20-row seedling flats. This year, he bought a secondhand Vandana Tubeless Direct Seeder. He feels he's been getting higher germination in the 288 trays. And the plants seem to grow more quickly—perhaps there's less transplanting shock because more soil stays with the root.

He seeds most things two and some—impatiens is one, three times. The amount varies—there's 400 trays of impatiens and six of calendula, for example.

He buys in as well—vegetative geraniums and fuchsia, variegated and New Guinea impatiens, Proven Winners...

Transplanting starts in the retail house, which is filled by March 15. He then begins filling the lower houses, one at a time. All are full by May first.

When starting up a house, Bill curtains it into two sections with

sheets of plastic dropped from the frame. To save heat, he fills the furnace side first—opening up the sheets during the day to allow passage, then clothespinning them shut at night—"we may not save that much, but enough to make a difference."

He uses Lambert V-Mix-300 as his growing medium, adding Sierra 17-16-10 slow-release fertilizer for use in the earlier, grayer growing period. He uses 14-14-14 later in the season and feeds with Peters 15-16-17, recommended for soilless mix.

One of Bill's specialties is the variety of container shapes and sizes: Decagons, UFOs, Basket Buddies, Wallpots, 12- and 14-inch Moss Baskets, Whiskey Barrel Liners—all are available. There are fiber pots, seen as more "earth-friendly." Geraniums come in 4-, 6-, 8-, 10-, and 12-inch pots—"not many places offer that range of sizes."

He also uses recycled pots. He's made arrangements with the recycling center in Harrisville to take whatever pots they collect and encourages customers to bring theirs back voluntarily. Everything's sorted, rinsed, and washed in Green-Shield. He still has to buy pots, but 25-30% are furnished through recycling. As local landfills close (Keene's closes next year), he sees the percentage increasing. The practice saves money and also is attractive to ecology-minded clientele.

He looks for new ways to package his product. He sells herbs in a four-inch pot, individual pots for \$1.25, but he also sells a do-it-yourself "gift tray;" people can fill a white plastic shuttle tray with a handle with any arrangement of herbs they choose; the tray goes for \$6.95.

He opens April 15, offering bulk bark mulch from local mills and some bagged medias and fertilizers ("but not many—we're mostly

green"). Nursery stock and perennials are also available.

He offers 200 varieties of perennials, bought in bare-root and potted up in six-inch and one- and two-gallon containers. "The Perennial of the Year" is never a top-seller. People want to see what it looks like in their neighbor's yard before buying it themselves. People want old-fashioned plants—they all remember Grandmother's garden—but they want the modern varieties."

The nursery yard includes some four- and five-inch caliper trees. Creeping junipers sell well: "the land around here is hilly and people use it as ground cover in places too awkward to mow." Trends? "Fewer foundation plantings—more island and perimeter gardens—people plant

defined.

His business is 90% retail. Most of his customers are year-round locals and, like everyone, he's competing with the WalMarts (in Ringe and Hinsdale) and K-marts (Keene) and supermarkets around him for their business. "You need to have what customers want"—he offers twelve varieties of New Guinea impatiens, "but a few new things they can't get elsewhere—and this year he's growing supetunia 'Kilkenny Bells,' gerbera daisies, and a variegated Swedish ivy ("good as an accent plant") for the first time.

He offers the standard vegetables—as well as some slightly more unusual ones (leeks, eggplant)—grown in deep 60s. And rhubarb and raspberries and two-



now to create privacy." Wildlife Plantings? "I use blueberry in my own work and people ask for high-bush cranberry and mountain ash, but the bird they really want to attract is the hummingbird and we sell lots of lilies and snapdragons and *Monarda* for that reason."

After mid-May (and less danger of frost), he starts selling greenhouse-grown material. He doesn't sell from the lower houses—sales and production areas are clearly

gallon pots of cherry tomatoes.

Appearance is important. The display area by the road only suggests what is offered. Purple and Pink Wave petunias, planted in whiskey barrel liners, line the walkway from the parking lot (20 cars) to the retail greenhouse and shop.

Perennials are displayed on benches, some three-tiered; some under a 30'x40' lath house. Hanging baskets are part of the effect: browelia, fuchsia, tuberous begonias,

lobelia—all are displayed. Purple wave is a big seller; scavoli's popular. "People like blue—but they need to know it's a heavy feeder."

In the shop this year, there will be two cash-out centers ("our goal is to have no lines on Saturday") and a central display island ("for better traffic flow")

Information is offered in a variety of ways. He puts his sun-loving plants on the south side of the greenhouse and the shade-loving ones on the north. Customers are aware of this fact when making their selections.

He classifies marigolds (he grows sixteen varieties) according to height in two-inch increments, from Boy Yel-

low, Boy Orange, Janie Spry, Janie Harmony (8"-10") to Galore Yellow (16"-20") and makes a sign—"People always ask about height—height and color—if you get a lot of questions, you make a sign."

Although production and service are still evolving—and probably always will be, Bill sees no change in size. Large enough to be a full-time business and small enough to be run by him and his wife with occasional help from members of their families, "it's just about what the local market can support."

Barrett's is open 9-6 seven days a week until October. On July 4, Bill has a half-price sale on all annuals and the greenhouses are closed

down. For the rest of the summer, the emphasis is on perennials and nursery stock and, when time permits, landscape construction. In late fall, stock in the nursery yard is laid in two rows—12'x100' and 24'x50'—and covered with micro-foam. The perennials go into the cold frame. Bill covers them with a foot of straw and one layer of plastic and puts down mouse bait every ten feet. In winter, he works in his woodlot until January, when the season begins again. (B.P.)

Barrett's Greenhouse and Nursery is on Route 32, 694 Old Homestead Highway, Swanzey Center, New Hampshire 03446-2312; the phone number is 603-352-8665.

Z Notes

Will there be an overproduction of bedding plants and summer annuals? Will we be seeing \$5.00 flats? Boy, I hope not any time soon.

The greenhouse industry has had steady growth—a 5% annual increase of production space for the last seven-to-ten years. This may not seem like much, but simple math tells us that we've increased production by 50%. Where the big growth has taken place is in the large growers. (I classify a large grower as anything over one-to-two acres—80,000 square feet.) In many instances, these growers have doubled their production size overnight. After this massive expansion has come mechanization. From seeding to shipping, machinery has entered our industry to reduce costs and our dependence on physical labor. What all this means is that at some time there may be a market correction—demand will slow and pricing will either flatten out or drop.

I'm beginning to realize that growing the plant may soon be the easiest part of our business. Figuring costs, knowing how to market, streamlining our shipping dilemmas, finding new markets, extending our season—these are the real challenges.

Every industry goes through these growing pains; the issues are building long before they emerge.

(A note on myself—I've had a promotion within the Scotts Company: to Technical Manager of the Northern Horticultural Group. So my comments in the future may be on a scope larger than that of just the Northeast.)

Jim Zablocki can be reached at 603-224-5583.



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Compost

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Dr. George Estes

Composting represents the most rapidly expanding and environmentally sound strategy to handle solid organic wastes. In composting, micro-organisms convert organic materials into soil-like material of potential value as a plant-growth medium. At the commercial level, it involves a precisely controlled decomposition with careful attention to inputs and to such composting conditions as moisture, oxygen, and temperature.

Our consumptive society generates about 200 million tons of waste annually. Only three options exist for its disposal: incineration, landfilling, and landspreading/horticultural use. Since over 60 percent of the total waste stream is organic material, composting—reducing odor, variability, and particle size—can turn this mix into a homogeneous material for horticultural use. Because so much of the waste stream is a potentially good nutrient resource and feedstock, composting can reduce waste disposal costs for municipalities and fertilizer/media costs for horticulturists.

Unfortunately, performance standards do not exist to evaluate compost "quality." The information which accompanies a compost purchase is often very limited or totally absent. If assay data is present, it is often meaningless. Furthermore, production of a uniform product is often difficult due to such factors as variable inputs (leaves, manure, biosolids, wood ash, brush etc.), the process (windrow, in-vessel, static pile), or the location of the operation. Confidence in the product is essential for acceptance by the highly sophisticated horticultural industry: greenhouse production cannot be jeopardized by use of a growing medium having unknown properties.

Finished compost is usually dark brown or black and resembles commercial potting soil, although it may be much coarser. However, laboratory analysis must be conducted on a compost sample to test whether the product will be suitable for your intended use.

Any reliable producer of compost should provide

analytical information to permit evaluation of the product to make sure of its proper usage within your growing system. Specific values will govern whether the compost can be used directly as a growing medium, as a mulch, as a soil amendment, or as a component of a potting mix. Two laboratory measurements—soluble salts and ammonia ($\text{NH}_3\text{-N}$) levels—are priorities in determining suitability as a growth media: if either measurement tests high and plants are placed into the pure compost, devastating results can occur. Secondarily, tests for pH, C:N, and available nutrients offer valuable information on quality; the C:N ratio refers to the balance between total N (nitrogen) and total C (carbon).

TABLE 1. Laboratory analysis of key parameters for assessing compost quality. Values in bold are critically important to plant health.

Variable Measured	Units	Observed Range	Critical Level
pH (1:1 H_2O)	-log H^+	6.5- 8.0	> 8.5
Soluble Salts	mmhos/cm	1.0- 8.0	> 2 - 3
<i>Available Nutrients (Spurway Extraction):</i>			
$\text{NO}_3\text{-N}$	ppm	5 - 400	None
$\text{NH}_4\text{-N}$	ppm	10 - 1000	> 50-100
Phosphorus(P)	ppm	50 - 5000	None
Potassium(K)	ppm	75 - 4000	None
Calcium	ppm	300 - 1000	None
Magnesium	ppm	50 - 600	None
Total N	%	0.5 - 3.0	None
Organic Matter (LOI) ²	%	40 - 80	None
C:N Ratio	—	15 - 35	None
Ash	%	5 - 15	None
CEC	meq/100g	5 - 30	None

¹Plant health may be jeopardized if compost is used directly

This is important because it affects nitrogen (N) availability. The inputs to the process supply carbon as the energy source and nitrogen for protein synthesis for the micro-organisms and commonly have a C:N ratio of about 35:1. The finished compost usually has a C:N ratio of about 15-20:1 after experiencing a weight reduction of over 50 percent during the composting process.

Finally, tests for total nutrient content, organic-N concentration, and even trace metal content provide

clues about the need for supplemental fertilizer or potentially toxic metal content.

Table 1 illustrates the analyses conducted on compost by the UNH Analytical Services Laboratory and typical ranges observed in samples submitted for assay in recent years. Additional tests (e.g., organic-N and trace metals) will be done at UNH upon request.

Below is a brief interpretation of the most critical measurements.

Acidity or Basicity (pH)

The pH of compost measures the acidity (or basicity) of the product. This can range from 0 (very acid) to 14 (very alkaline) with pH 7.0 as the neutral point. The pH of most composts is generally near neutrality and provides an important clue about the compost inputs and process. If pH exceeds 8.5, the compost mix probably included wood ashes or kiln dust as a feedstock. Plant growth is likely to be hindered at extremely high pH (>8.5) unless the compost is diluted with soil, peat, or another amendment, bringing the pH into a more ideal—for most container plants—range of 5.5 to 6.5.

Soluble Salts

Compost which shows high soluble salt readings (e.g., 2-3 mmhos/cm) is probably "nutrient-rich," but high salts, because of phytotoxicity, will preclude its direct use as a plant growth medium. Often, high salts are accompa-

nied by high levels of soluble potassium (K), since K salts are notable for their high salt index. If manure has been a feedstock, high K readings are common. Reduction of salts to tolerable levels may require that the compost be diluted with low-salt materials (e.g., 1:3 compost: soil v/v basis) prior to its greenhouse use. If the compost is only being used as a mulch, rains will usually leach excess salts away from the root zone. Plants are extremely sensitive to salts during the germination and seedling stages of growth, greater salt tolerance being exhibited by mature plants.

Ammonia (NH_4^+ -N)

Extreme caution must exist if a compost tests for high levels of ammonia-N (NH_4^+ -N). High NH_4^+ -N tests are common if composts contain significant quantities of rapidly decaying N-rich organic matter such as manure or wastewater treatment biosolids. Composts having high ammonia (NH_4^+ -N) are often viewed as lacking "stability" or "maturity". Severe plant injury can result at ammonia levels in excess of 100 ppm NH_4^+ -N if compost is used directly as a growing medium. This has been observed in ornamental plants grown commercially in New Hampshire. If the compost is diluted with other materials or used as a mulch, ammonia injury is less likely. When composting proceeds under good aeration or the finished compost is stored and turned frequently, the ammonia levels usually drop rapidly, since it is converted to nitrate-N (NO_3^- -N), which is the

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plant-available form of nitrogen.

C:N Ratio

The C:N ratio provides information on the potential availability of nitrate-N (NO_3^- -N) for plants growing in the compost. A wide value of 20-30:1 will likely lead to N immobilization by microbes which can effectively compete with crops for the NO_3^- -N. An ideal C:N ratio of 10-12:1 is needed to assure N availability for plant growth, but few composts have such a narrow ratio. If test results show abundant concentrations of NO_3^- -N, organic-N, or total N—even in the presence of a rather wide C:N ratio, the long-term availability of N for plant growth may be satisfactory.

Take-home Messages

- Ask your compost supplier to provide you with product specs (preferably for your batch) including pH, soluble salts (EC), and ammonia. (You can also test pH and EC in your greenhouse with inexpensive meters. Ongoing monitoring is also important.)
- Composts vary greatly between products and even between batches. Not all composts are created equal.
- Composts can definitely have a place in ornamental plant production.

Dr. George Estes is Professor of Plant Biology, Department of Plant Biology, Spaulding Life Science Building G48, University of New Hampshire, Durham, NH 03824. His phone number there is 603-862-3220.



The Griffin Guru

Filter First

Sometimes we hear something so many times that we just don't hear it—a point that my wife will confirm.

During the changeover our company just made to a new supplier of all those irrigation tubes, buttons, and drippers, it was again stressed that the best protection against clogging is to install the proper filters.

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I will say that, during my years with the Call Fire Department, I was amazed at what we would find caught in the pump screens—things that had come through the water mains of our town's distribution system.

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This has certainly been a season of false starts where spring is concerned. Near 70 degrees one day and freezing the next. Rain, then snow, then rain... Hopefully, by the time you read this, spring will be shedding its winter cloak and another growing season will be underway. As usual for this time of year, the Plant Diagnostic Lab has been relatively sample-free. There have been a few interesting problems to note, however.

PHYTOPHTHORA ROOT ROT, also known as **SHANKING**, was diagnosed on tulips. The symptoms include yellowing at the tips of the leaves, poorly developed and discolored roots, and shriveling of the developing flower. Like **PYTHIUM**, **SHANKING** is favored by high moisture levels in the growing medium. A geranium sample was submitted with severely chlorotic, nearly white younger leaves. The problem was caused by temperatures that were too high; plants grown in a cooler area of the greenhouse were unaffected.

The three major problems to watch for during the next two months on greenhouse crops are **BOTRYTIS**, **PYTHIUM**, and **OEDEMA**. **OEDEMA** is most common on ivy geraniums. **BOTRYTIS** BLIGHT and **PYTHIUM** root rot can infect any greenhouse crop. All of these are related to watering practices and humidity levels. Proper plant spacing, good air circulation, good sanitation practices, and avoiding over-watering go a long way in preventing problems with these diseases. **IMPERIUM NECROTIC SPOT VIRUS (INSV)** continues to be one of the greatest threats to bedding plants and other greenhouse crops. Symptoms vary with the host and may include ring spots, mosaic, necrotic spots, black stem lesions (common on impatiens) and stunting, to list a few. In-

coming plant material should be isolated, if possible, and monitored for symptom development and thrips. Remember, thrips control is essential for managing **INSV** and don't forget the importance of weeds and leftover plants as a source of the virus. Additional problems common to bedding plants and other spring greenhouse crops include **POWDERY MILDEW** on petunias, snapdragons, roses and rosemary, and various leaf spots.

Two 'new' leaf spots to watch for are **ACIDOVORAX** on geranium and **CERCOSPORE LEAF SPOT** on pansy. The symptoms of **ACIDOVORAX**, a bacterial leaf spot, are variable brown sunken lesions that are associated with chlorosis. It has been found on many cultivars in Florida, Indiana, and Michigan. It is a disease of young plants—first seen at the two-leaf stage, but disappearing as plants get larger. It is often seen in mixed infections, so it may be missed. Early **CERCOSPORE LEAF SPOT** symptoms include tiny purple spots and flecks on the upper foliage. Intermediate lesions have a light center with a purple rim, and, in the final stages, large spreading purple lesions that dry and turn necrotic often appear on the lower leaves. This disease starts as a problem in southern plug production and then moves into northern states. The disease may be seed-borne. If you suspect you have either of these diseases, submit a sample to the UNH-PDL for confirmation.

During the next month or two, inspect woody ornamentals for winter injury. Prune any branches and limbs damaged by ice and snow, remove leaves that are dead or severely winter-burned from broad leaf evergreens, and after bud-break, remove any branches that fail to leaf-out.

The fungi that cause **ANTHRACNOSE**,

LEAF SPOTS, and **NEEDLECASTS** usually infect the leaves/needles during the period between bud-break and full leaf/needle expansion. Thus, April-May is the key time to control many of these foliar diseases. Sanitation measures, such as raking the previous year's leaves, can greatly reduce the levels of infection. Fungicides may be required, however, for valuable specimens or where disease pressure is high. Control measures for **SHOOT BLIGHTS**, such as **PHOMOPSIS TIP BLIGHT** (juniper), **BACTERIAL BLIGHT** (lilac and forsythia), and **MONILINIA SHOOT BLIGHT** (*Prunus* spp.) also need to be applied as growth resumes in the spring. We will likely continue to see problems induced by the '95 (and late '96) drought on many woody plants during the upcoming growing season.

Although we have not had persistent snow cover this winter (at least in the southern portion of the state), **PINK SNOW MOLD** can still be a problem on turfgrasses in the early spring. Cool temperatures (below 50F), abundant soil moisture, and the absence of extended dry periods favor the growth of snow mold fungi. The severity of **GRAY SNOW MOLD** infections should not be as great as last spring due to the lack of persistent snow cover.

If you wish to submit plant material to the UNH-PDL for diagnosis, send samples (with a check for \$12.00) to: The UNH Plant Diagnostic Lab, C/O Dr. Cheryl Smith, Plant Biology Department, 241 Spaulding Hall, UNH, Durham, NH 03824. Samples should be accompanied by an identification form (available from your county Cooperative Extension office, or call 603-862-3200). Cheryl Smith is the UNH Cooperative Extension Specialist in Plant Health, and can be reached at phone: 603-862-3841, FAX: 603-862-2717, e-Mail: cheryl.smith@unh.edu.

New Plants, New Uses

After a winter of reading flower and herb catalogs, it's time to get rolling out there in the gardens! Soon customers will come streaming through the doors looking for new plants and new ideas. Here are a few.

Last year, Beth Simpson at Rolling Green Landscaping showed me a new sage—a shorter, compact plant called Ornamental Broadleaf Sage (*Salvia 'Bergarten'*). It is lovely; it doesn't seem to get as woody and rangy as regular garden sage (*Salvia officinalis*) and the broad sage-green leaves look beautiful in the herb garden or small landscape. Best of all, the leaves are just as tasty and tender as can be.

If you haven't cooked with fresh sage, you've missed something very special and you might want to try this recipe. If you like it, you might want to print it up and give it to customers when they purchase *S. 'Bergarten.'* It's one of my concoctions based on old-fashioned bread pudding—you can use a variety of herbs and it's quick and easy to pop into the oven for a hearty breakfast before going out to work in those gardens.

Savory Herbal Breakfast Pudding

Take a loaf of your favorite French bread and cut into one-inch-thick slices. Melt half a stick of butter in the bottom of a 13" x 9" pan. Sprinkle three tablespoons of minced fresh sage leaves and a bit of minced parsley and chives over the melted butter. Arrange the slices of bread over the herbs. Beat six eggs with 3/4 cup milk and a bit of salt and pepper. Pour around and over the bread slices. Sprinkle a half cup to a cup of grated cheese of your choice over the top and refrigerate until morning. Sprinkle paprika generously over the top and bake in an oven (preheated to 350°F) for about 20 minutes—or until the eggs are set and the top nicely colored. Serve with a fresh fruit cup and you have a perfectly wonderful breakfast.

There are two dill varieties that I highly recommend. They're not brand new, but I haven't seen them around much. The first is Dill Bouquet. This one produces lots of seeds after the big yellow umbels of florets go by. The huge seed heads can be gathered into a paper bag and the bag tied right there in the garden so the heads don't mature and drop when you're busy and not looking. Dill seed is wonderful in potato salad, cole slaw and other cabbage dishes, squash, carrots, cauliflower, Brussels sprouts. For persons who make a lot of pickles from their garden, this is a "must have."

The second dill is Dukat Dill. This is the one to grow if you like "dill weed" and want lots to dry for later use. Its leaves are more abundant and the plants do not go to seed as fast as other types. The flavor is mellow and aromatic—wonderful with fish, green beans, new potatoes. Mince the leaves and sprinkle them over your salads and fresh garden tomatoes. Plant this one several times so you'll have a supply all season.

This recipe is for Dill Mustard Sauce, excellent over grilled salmon or other fish of your choice:

Dill Mustard Sauce

- 1 tsp. salt
- 1 tsp. fresh ground black pepper
- 1 tbsp. sugar
- 1/2 tsp. ground allspice
- 1/4 cup cognac
- 1/4 cup white wine (I've used just wine with no problem.)
- 6 tsp. Dijon-style mustard
- 3 tbsp. chopped Dukat Dill leaves

Put all ingredient except the mustard and dill weed into a small saucepan. Bring mix to a boil and boil vigorously until reduced by half. Strain and keep hot while you grill the fish. Just before serving, stir the mustard and dill into the hot sauce. Pour a spoonful over each serving and garnish with a dill sprig and a bit of lemon. A su-

perb summer supper with salad and crusty bread.

Anise hyssop (*Agastache foeniculum*) is not new, but I am amazed at the number of people who do not know of it. It's gorgeous in the garden—tall and sturdy, with blue-to-lavender flowers that are much appreciated by the bees and butterflies: very nice for the back of the border and excellent for culinary use. The leaves and flowers are all sweetly anise-scented. They make a naturally sweet tea, are wonderful sprinkled over a fresh fruit cup, and delicious for baking, marinades, or tossed with salad ingredients.

There's a new cilantro making headway on the market. Known as Vietnamese cilantro (*Polygonum odoratum*), it's a tender perennial that propagates quickly and easily from cuttings. It tastes like regular cilantro (coriander), but does not go to seed or die back as fast. I kept one inside in a pot this winter and it did rather well as long as I kept it trimmed back so it wouldn't get lanky and weak. We use it just as you would the regular varieties—in salsas and other such recipes.

Epezote (*Chenopodium ambrosioides*) is often discussed in the cooking areas on-line. Called Mexican tea, it's unthinkable for good Mexican cooks to prepare beans without a sprig of fresh epezote. An annual that self-sows readily, its leaves are used extensively in central and southern Mexico. As we become more aware of ethnic cuisines, it's important to learn about the herbs and spices used in them. I finally found a seed source at Shepherd's Garden Seeds.

This is a small sampling of the new plants and seeds available to us. It's great fun to search them out, give them a try in your own gardens and kitchens, then pass your findings along to your customers.

Tanya Jackson, a well-known area herbalist, can be reached at 603-431-6774.

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T W I L I G H T M E E T I N G

Wednesday, June 18, 1997, 6-8pm
LONGACRE'S NURSERY CENTER
220 Mechanic Street, Lebanon, NH 03766.

A Complete Garden Center catering to the Upper Valley" is the site of the second New Hampshire Plant Growers' Association Twilight Meeting of 1997.

Longacre's Nursery Center (eight greenhouses—two retail, six production—and a 5000-square foot retail shop) seems to offer just about everything—annuals, perennials, nursery stock, gardening supplies; landscaping, hardscaping (stonework)...

One of its strengths is its stability—family-owned, "we've been here now 23 years"—but there are changes. There's new emphasis on hardscaping, with a wide range of colors and sizes of bluestone and stone for walls and patios offered. Longacre's is also moving toward offering a "planting service," rather than full-scale landscaping. And "we grind our own bark mulch and will fire up the grinder for demonstration."

There's a tour and refreshments and a chance for members to see one of the larger garden centers in the state "at our best," at the peak of the retail season.

For information, contact Norm Longacre at 603-448-6110.

Directions: Take Exit 19 (Rte 4) off Rte. 89 (Mechanic Street is Route 4). From the south, turn left; from the north, turn right; Longacre's is a quarter-mile on the left.



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